

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, SHAHEED ZULFIQAR ALI BHUTTO CAMPUS, KHAIRPUR MIR'S Phone No.0243-9280314

No. PD/MUET/KHP/-114 Dated: 10-04-2017

To,

Manager (Reforms)

Sindh Public Procurement Regulatory Authority,

Government of Sindh, Barrack 8 Secretariat 4A Court Road, Karachi.

SUBJECT:

PROCURMENT OF EQUIPMENT FOR INSTRUMENTATION &

CONTROL LAB OF ELECTRICAL ENGINEERING DEPARTMENT

MUET, SHAHEED Z.A BHUTTO CAMPUS KHAIRPUR MIR'S.

Reference:

NIT NO: PID (H) 97707 DATED 29-08-2016 SERIAL NO.29804.

Dear Sir,

Please find enclosed herewith the Letter of Award, BOQ, Contract Agreement; BER and Contract Evaluation Form for hoisting on SPPRA Website as required under Rule No.50 of SPPRA 2010 and amended 2013.

It is pertinent to mention here that the BER along with other required documents have already been sent to SPPRA under Rule 45 of SPPRA Rule 2010 vide this office letter No. PD/MUET/KHP/-36 Dated: 01-02-2017 and the same has been hoisted on SPPRA Website on 08-02-2017. (Copy enclosed).

With Best Regards,

PROJECT DIRECTOR MUET, SZAB, CAMPUS KHAIRPUR MIR'S

C.C

- 1. Deputy Director, ICPC MUET, SZAB Campus Khairpur Mir's Letter of Award, BOQ, Contract Agreement and Contract Evaluation Form for uploading on web-site of MUET, SZAB Campus Khairpur Mir's.
- 2. Secretary to Pro Vice Chancellor, MUET, Shaheed Z.A.B Campus Khairpur Mir's.

M/s RASTEK Technologies,

Classic Centre, C-15, Block-16, Gulshan-e-Iqbal, Main University Road, Karachi-75300, Pakistan Tel +92 – 21 -111, Fax +92-21-34994678

Subject:

SUPPLY OF LABORATORY EQUIPMENT FOR INSTRUMENTATION & CONTROL LAB OF ELECTRICAL ENGINEERING DEPARTMENT AT MUET, SHAHEED Z.A/BHUTTO CAMPUS AT KHAIRPUR MIR'S.

Reference: No. RAL/IND/QR-101058/2016 dated: 17.09.2016

Dear Sir,

Please find enclosed herewith an order form for supply of Lab Equipment for Instrumentation & Control Lab of Electrical Engineering Department, MUET, SZAB Campus Khairpur Mir's, under Category-B of the Conditions of Contract (on C&F basis), as per your tender under reference discussed with your representative during the meeting of Equipment / Furniture / Any other material Selection & Tender Scrutiny Committee held on 16.12.2016 and subsequently approved by Approving and Contract Award Committee in its meeting held on 23.12.2016 for an amount of USD 65,789.00.

You are requested to supply the Equipment latest by 30-06-2017 as per tender document / details given in Clause-8 of the Order Form and the agreement arrived in the above said meetings.

You are further requested to attend the office of the undersigned to sign the agreement duly adhesive stamped of 0.35% of the total value of contract, furnish the revised Proforma invoice in accordance with the schedule of particular of stores and performance bond 10% of the Value Work Order for the period as stated under Clause-23 of the Conditions of Contract within 7 days after receipt of this supply order.

Yours faithfully,

(Engr. Sajjad Hussain Memon)
Project Director

Copy f.w.cs. for information to:-

- 1. The Director Finance, MUET, Jamshoro.
- 2. The Director (W&SP), MUET, Jamshoro.
- 3. The Chairman, Electrical Engineering Department, MUET, SZAB Campus Khairpur Mir's.
- 4. The Secretary to Vice Chancellor, MUET, Jamshoro.
- 5. The Secretary to Pro-Vice Chancellor MUET, SZAB Campus Khairpur Mir's

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(Engr. Sajjad Hussain Memon)
Project Director

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, SHAHEED Z.A BHUTTO CAMPUS KHAIRPUR MIR'S.

ORDER FORM

Project Directorate.

Mehran University of Engineering and Technology, Shaheed Z.A. Bhutto Campus at

Khairpur Mir's.

No. PD/MUET/KHP/ -88 1. Contract No. & Date:

Dated, 20-03-2017

2. Name & Address of the Contractor. M/s RASTEK Technologies,

Classic Centre, C-15, Block-16,

Gulshan-e-Iqbal, Main University Road,

Karachi-75300, Pakistan

Tel +92 - 21 -111, Fax +92-21-34994678

3. Contractor's Tender No. & Date No, RAL/IND/QR-101058/2016 dated: 17.09.2016

4. Head to which the cost is debitable Essential Needs for Strengthening and

> of Mehran Development University Engineering & Technology, Shaheed Z.A Bhutto

Campus Khairpur Mir's.

5. Conditions of the Contract As contained in the tender documents and as :

modified to incorporate the agreements arrived at in the meetings of Equipment / Furniture / Any other Material Selection & Tender Scrutiny Committee held on 16.12.2016 in the office of Pro-Vice Chancellor, MUET, SZAB Campus Khairpur Mir's and subsequently approved by approving and contract award committee in it's meeting held on 23.12.2016 in the committee room of Vice

Chancellor Secretariat at MUET, Jamshoro.

6. Particulars Governing the Suppliers (Stores).

> As per details given in Clause No.4 of (a) Specifications

"Information to Tenderers" and as per Clause-8, "Particulars of Stores" of this "Order Form".

(b) Manufacturer's &/or Supplier's Name & Address M/s INFOTECH USA, Inc. 21 Meyer Avenue,

Valley Stream, NY 11580 (USA) Tel: 516-825-3351 Fax 516-568-0566

USA (c) Country of Origin

30-06-2017 7. Last date of Shipment/ Delivery

Attached 8. Particulars of Stores

8 - PARTICULAR STORES

Item as per Tender	2	Instrumentation & Control Lab	system. In consist of a base module tuee basic control concepts of real world applications of ise control in automobiles to a manipulators used in control concepts, the control cas, including nonlinear al, time delay, and dynamic a geared servo-mechanism an optical encoder and a use the output shaft position, easure the speed of the motor. Hexible enough to add perform experiments to a control challenges such as uidance of sea vessels, aircraft satellite navigation.	Beam control system.
				-
Item Code	12		ELJICL-172-01	
Description of Store	77		Ball & Beam Control System	
Specifications of Stores with Catalogue No.	50		As per Column 4	
Cnit	9		each	
Oiy	7			
Currency	96		₩.	
Price per Unit	6		USD 20,909.00	
Total C&F Price for the item under Category-B	10		USD 20,909.00	

S. No.	liem as per Tender	Item Code	Description of Store	Specifications of Stores with Catalogue No.	Unit	Ory	Currency	Price per Unit	Total Care for the item under Category-B
	design a PID-based controller that maintains the direction of the gyroscope module performance of the system The workstation must be provided complete with all additional components required for proper operation with MATLAB and Lab View. Technical Specifications: Base dimensions not more than <=600mm × 300mm (L. x W) Beam ength not more than<= 500mm Ball mass not more than<= 700g Ball and Beam module mass not more than<=700g Total Assemblymass not more than<=3000g Ball position sensor measurement range =±5 V Motor Armature Inertia >1.4 x 10-6 kg.m2 Flywheel Inertia about Spin Axis>=ikgm2 Motor Maximum Speed 6000 R.P.M Tachometer Measurement Range ±5 V Tachometer Sensitivity >0.001V Encoder Resolution>=4096								
12	Great Ratto / U Two Level Tank control System. The system should be able to convey the control concepts and theories related to fluid dynamics, pressure and time delays, encountered in real world industrial applications. The item must provide learning regarding: Designing of the transfer function based mathematical model of the coupled tank system using basic techniques of the control engineering.	ELACL-72-02	Two Level Tank Control System.	As per Column 4	each	-	69	USD 11,850,000	USD 11,856.00

Total C&F Proc. it for the item under Category-B		00 OOD 13'100'00
Price per Unit		USD 6,550.00
Currency		69
Ory		И
Unit		each
Specifications of Stores with Catalogue No.		As per Column 4
Description of Store		DC Motor Control System
Item Code		ЕLЛСЦ-Т2-03
Item as per Tender	- Controller designing using PID and other techniques like pole placement and LQR in order to meet the required design specufications for various possible configurations of the coupled tank system. - Comparative performance analysis for the system when controlled with different types of controller at different operating configurations. - The system must be flexible enough to implement the advance control techniques for research the advance control techniques for research all additional components required for proper operation with MATLAB and Lab View. - Hands on training must be provided for all item on both Mat Lab and Lab View Platforms Technical Specifications: Device mass upto 10 kg Frame dimensions – H × W × L 300 mm × 300 mm yessure sensor sensitivity 61 mm/V Pressure sensor range 0 to 7 kPa	tem should be a servo I demonstrate the control in a variety of be configured to beed. Students must entally d of a motor aportional-integral (PI) dof a motor portional-derivative postition of a motor oportional-integral- or tracking error and rovided complete with quired for proper
No.		m

Š.	frem as per Tender	Item Code	Description of Store	Specifications of Stores with Catalogue No.	Unit	Qty	Currency	Price per Unit	Total C&F Price for the item under Category-B
	• Hands on training must be provided for all item on both Mat Lab and Lab View Platforms Technical Specification. Motor nominal speed around 3000 RPM Motor torque constant 0.042 Nm/A Encoder line count 512 lines/rev Encoder line count in quadrature 2048 lines/rev Encoder resolution (in quadrature) 0.2 deg/count Amplifier type PWM Amplifier output voltage ± 24 V			·					
7	Heating, Ventilation & Air Conditioning System. The Heating, Ventilation and Air Conditioning (HVAC) must be suitable to teach and demonstrate the fundamentals of climate control. The system could easily be configured to control the temperature in a chamber using a variety of control methods. Students must learn how to: • model a system • design and implement a relay feedback controller to control the temperature in the chamber. • design and implement a proportional-integral (PI) controller to control the temperature in the chamber. • The workstation must be provided complete with all additional components required for proper operation with MATLAB and Lab View. • Hands on training must be provided for all item on both Mat Lab and Lab View Platforms. Technical Specifications: Heating element maximum power output upto 20 W Amplifier type PWM Amplifier output voltage ± 24 V with 100 % duty cycle. Fan rated voltage 5 V Multi speed fan running around 3x3000 rpm	EL/ICL-72-04	Heating, Ventilation & Air Conditioning System.	As per Column 4	cach	~	69	USD 2,775.00	USD 5,550.00

6	w	φ
Liem as per Tender	Basic Rotory Pendulum Control System This basic Rotory Pendulum system must be suited to teach and demonstrate the fundamentals of inverted pendulum halance and control. The system could easily be configured to teach hybrid swing-up and LQR control fundamentals. Students must learn how to. • model a pendulum • design and implement a state-feedback controller to balance the pendulum in the upright position • design and implement a controller to swing up the pendulum • The workstation must be provided complete with all additional components required for proper operation with MATLAB and Lab View. • Hands on training must be provided for all item on both Mat Lab and Lab View Platforms Technical Specifications: Rotary pendulum link mass upto 25 g Rotary pendulum link mass upto 25 g	Vertical Take-off and Landing (VTOL) system The Vertical Take-off and Landing (VTOL) system must be suited to feach and demonstrate the fundamentals of flight dynamics and vertical take- off and landing flight control. The system could easily be configured to control the flight of the trainer using a variety of control methods. Students learn how to: 'model a system 'design and implement a proportional-integral (PI) controller to coutrol current 'find the system resistance based on measurements 'design and implement a proportional-integral- derivative (PID) controller to control current 'The workstation must be provided complete with all additional components required for proper operation with MATLAB and Lab View.
Item Code	ELACL-72-05	EL/ICL-T2-06
Description of Store	Basie Rotory Pendulum Control System.	Vertical Take-off and landing (VTOL) System
Specifications of Stores with Catalogue No.	As per Column 4	As per Column 4
Unif	each	cach
QU	7	CI .
Currency	so.	S
Price per Unit	USD 3,595.00	USD 3,595.00
Total C&F Price for the item under Category-B	USD 7.190.00	USD 7,190.00

USD 65,789.00

TOTAL C&F VALUE

9. Final place of Delivery

: Mehran University of Engineering and

Technology, Shaheed Z.A. Bhutto Campus at

Khairpur Mir's.

10. Dispatch Instructions

(a) Consignee for Dispatch

The Project Director,

MUET, Shaheed Z.A. Bhutto Campus at

Khairpur Mir's.

b) Dates of Shipment &

The Contractor must intimate in writing to the Project Director MUET, SZAB Campus Khairpur Mir's, Sindh, Pakistan the date of shipment of the Stores soon after the shipment & approximate date of arrival of the ship at Karachi port. This information must reach the Project Director at least 8 days before arrival of the ship. In case of failure to supply this information in

contractors account.

(c) Part shipment

: Not allowed

(d) Transshipment

: Allowed

(e) Ship

Pakistan Flag ship should be used as far as possible for shipment of the Stores; if no such ship is available such other ships may be used consistent within implementation of the Project

time, the demurrage and other charges will be on

with economy and efficiency.

(f) Shipment

The Stores must be shipped under desk

11. Packing & Marking.

(a) Packing

The Packing of the equipment shall be usual Export packing to ensure safe journey by sea,

rail and road of the goods to destination.

(b) Marking

Each packing shall be clearly & legibly marked

in English with the following.

(i) Port of Designation

Karachi

(ii) Name of the Ship.

By Air

(iii) Name & Address of the Consignee Project Director,

MUET, Shaheed Z.A. Bhutto Campus Khairpur

Mir's,

(iv) Name & Address of Contractor. M/s RASTEK Technologies,

Classic Centre, C-15, Block-16,

Gulshan-e-Igbal, Main University Road,

Karachi-75300, Pakistan

Tel +92 - 21 -111, Fax +92-21-34994678

(v) Contract No. & Date

No. Nil

Cont'd...

- (vi) Case Number
- (vii) Gross Weight & Dimensions : Dimensions (Length, breadth & height)
- (viii) Marking Label

Mehran University of Engineering & Technology, Jamshoro, 4"x_6" green

rectangle.

MUET SZAB

If the contractor fails to comply with above instructions, he shall be held responsible for any loss or demurrage etc. Occurring due to wrong/nil/insufficient marking of package etc.

- 12. Inspection:
 - Inspection authorities and place for pre shipment inspection.
- As required by Insurance Co. if any.
- (ii) Inspection authorities for final inspection at MUET, SZAB Campus Khairpur Mir's.
- Representative of
 - (a) MUET, SZAB Campus at Khairpur Mir's.
 - (b) Insurance Company &
 - (c) Contractor.

- (iii) Mode of Inspection. (a)Pre shipment
- : The authorities for pre shipment inspection as mentioned at (i) above shall carry out inspection and issue inspection certificate.
- (b) Referrol to the Project Director:

However, in case of rejection of the Stores by the inspection authorities, the manufacturers/ Contractor will refer the cases to the Project Director MUET, SZAB Campus Khairpur Mir's, for final decision settlement/replacement etc.

- (c) Final Inspection
- The final inspection of the Stores will be done jointly by the authorities mentioned at (ii) above.
- (iv) Shipment without pre shipment Inspection.
 - (a) No Stores shall be shipped without pre shipment inspection by the pre-shipment inspection authorities mentioned at 12(i) above. The Contractor shall offer for pre-shipment inspection Stores fabricated by the manufacturers bearing their indelible and unbreakable seals and a certificate that each identifiable unit of Stores has passed adequate tests conforming to the requirements of the specifications. The manufacturer's certificate duly conformed as correct by the certificate of the inspection authorities mentioned in 12(iii) (a) above shall be annexed to the shipping documents and form part of the documents.

The Contractor will also produce evidence that he has already given a performance bond to the extent of 10% of the price of the Stores. These documents are to be produced before a letter of credit can be drawn upon.

- (b) Before the shipment commences, the Contractor will give under registered cover a notice of 21 days to the inspection authorities to carry out such pre-shipment inspection informing them of the date and address of the premises of the manufacturer where the Stores will be available for information.
- (c) In special cases, the MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's, may at the request of the Contractor, or if pre-shipment inspection is not required by the Insurance Company, waive the pre shipment inspection. In such cases, the Project Director, MUET, SZAB Campus Khairpur Mir's, shall issue the waiver in writing and, then the Stores can be shipped under manufacturer's test certificate. This waiver shall be deemed as authorization to ship the Stores for the purposes of negotiating the letter of Credit.
- (d) The pre-shipment inspection and/or the waiver thereof shall in no way absolve the Contractor of any of his /her obligations under this Contract.
- (v) Inspection of Arrival at Port: If it is found necessary to arrange inspection of the Stores on arrival at Karachi port for the purpose of customs clearance, or for any other purpose, it shall be done in the presence of the representatives of the MUET, SZAB Campus Khairpur Mir's, nominated by the Project Director and those of the Contractor and the Insurance Company. The report of inspection which, inter alia, should indicate the condition in which each unit of each package has been received will be signed by the above representatives. This inspection will be arranged by the Project Director, MUET, SZAB Campus Khairpur Mir's, with information to the Contractor and the Insurance Company.

(vi) Final Inspection and Taking over:

- (a) Upon receipt of the Stores in the labs of MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's, and after final inspection of the Stores by the inspection authorities mentioned at 12(ii) above and as stated in Clause-9 of the Conditions of Contract, a taking over certificate will be issued by the person nominated by MUET SZAB Campus as stated in Clause-10 of the Conditions of Contract. The taking over of the damages item of Stores shall be withheld until it has been completely repaired, replaced, re-inspected and found in acceptable conditions.
- (b) Wherever necessary, installation and demonstration of the Stores shall be arranged as stated in Clause-11 of the Conditions of Contract. After taking over, a completion certificate will be issued to the contractor as stated in Clause-12 of the Conditions of Contract.

13. Insurance:

An open cover note for the total cost of the Stores to be imported will be issued by M/s EFU General Insurance Ltd, Al-Fallah Chamber Tilak Incline, Hyderabad, , from Contractor's ware house to ultimate consignee, to remain valid for 16 weeks after clearance and dispatch of the Stores, by the Project Director clearing agent Specific comprehensive insurance policy will be issued by the above mentioned Insurance Company on receipt of the express Facsimile (Fax) advice of shipment of Stores which the Contractor shall send to the Project Director as well as to M/s EFU General Insurance Ltd, Al-Fallah Chamber Tilak Incline, Hyderabad, atleast 10 days prior to each shipment followed by confirmation copy by registered post. Payment of insurance charges will be made by the Contractor to M/s EFU General Insurance Ltd, Al-Fallah Chamber Tilak Incline, Hyderabad, at actual less Government discount, if any in non-convertible Pak currency against the bill duly supported by cover note, policy etc. as an extra item. Insurance should cover all risks.

except war risk, and should cover the C&F value of the Contract price. The Contractor shall be required to furnish details of consignments and other particulars necessary to enable the Insurance Company to ensure the consignment. If the contractor policy, and if any loss occurs to the consignee in the absence of Insurance of the consignment, it shall be the Contractor's responsibility to make good the loss so occurred to the Mehran University SZAB Campus.

(b) Simultaneous to the Fax advice, and in addition to that, the Contractor shall furnish a declaration of shipment containing full particulars of each consignment including number of packages, name of vessel, sailing date, port of shipment, C&F cost mentioning the number of contract to M/s EFU General Insurance Ltd, Al-Fallah Chamber Tilak Incline, Hyderabad, under intimation to the Project Director, MUET, SZAB Campus Khairpur Mir's,

14. Special Instruction:

The Contractor shall send by air mail 06 (six) sets of non-negotiable shipping documents direct to the MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's, so as to reach him 08 (eight) days before the arrival of the ship at Karachi port.

15. Terms of Payment:

A sum of USD 65,789.00 will be paid to M/s INFOTECH USA, Inc. 21 Meyer Avenue, USA, Principal of M/s RASTEK Technologies, Karachi, through irrecoverable and confirmed Letter of Credit to be opened by the MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's, Sindh, Pakistan on receipt of the following documents by the Project Director, MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's.

- (i) The inspection certificates issued by the pre-shipment inspection authorities or their nominees or authorization to ship the Stores. Project Director MUET, SZAB Campus Khairpur Mir's, as per Clause 12(iv) (c) above.
- (ii) On board ocean Bill of Lading showing freight pre-paid.
- (iii) Beneficiaries-signed invoice and packing list in quadruplicate. Invoice should include the amount of sea freight pre-paid.
- (iv) A certificate from beneficiaries that the Stores dispatched conform to the description/
 specifications of the contract in all respects. It is also to be certified that the packing
 of the cases is in accordance with clause N 0.11 above and that the Stores supplied by
 them are brand new and absolutely free from all defects in materials, quality and
 workmanship.

For inland expenses as stated at S.No.9 of (b) & (c) Part-2 (i, ii, iii, iv & v) Instructions to Tenderers which includes agent's/supplier commission, insurance charges, installation, commissioning and demonstration, all charges pertaining to clearance of the Stores except Custom, Excise duty and the Transportation charges from- the Port to the laboratories of the University, the contractor will be paid.

Extension in L.C: In case the contractor fails to deliver the consignment within the 16. stipulated delivery period the extension in the delivery period will be granted at the discretion of the University, consequently Bank's commission and other charges arising from the extension in the L.C will be borne by the Contractor.

> (Engr. Sajjad Hussain Memon) Project Director

Copy f.w.cs.for information, record and necessary action/implementation and where applicable to:-

1. M/s INFOTECH USA, Inc. 21 Meyer Avenue, Valley Stream USA.

2. The Chairman, Electrical Engineering Department, MUET, SZAB Campus Khairpur Mir's.

3. The Secretary to Pro-Vice Chancellor MUET, SZAB Campus Khairpur Mir's

(Engr. Sajjad Hussain Memon) **Project Director**

oject Director Z.A BHUTTO CAMPUS RPUR MIR'S

Quotation For Instrumentation & Control lab of Electrical Engineering Department

) onc	
	EL/ICL-T2-01 Ball & Beam Control System
Description Of Stores	Ball & Beam Control System
Detailed Specifications Of Stores with Model No.	M/S NI USA The Ball and Bearn module is ideal to introduce various control concepts related to unstable closed loop systems. Students can use it to demonstrate real-world control challenges such as aircraft roil control Using this experiment, students learn to: Design a proportional-velocity compensator to control the servo load shaft Design a cascade control to stabilize the ball. Implement the controllers and evaluate the Features: High quality aluminum chassis with precision-crafted parts. Robust machined aluminum casing with stainless steel rod Ball and Beam module easily attaches to Rotary Servo Base Unit. Optional Master/Slave configuration with additional Ball and Beam module Easy-connect cables and connectors. Fully compatible with MATLAB®/Simulink® nathabletwith United System models & parameters provided for MATLAB®, Simulink® LabVIEW*andMaple** Open architecture design, allowing users to design their own controller Readymade Experiment Topics: Modeling Topics. First-principles derivation "Transfer function representation "Model validation Control Topics".
Of Of Stores	N
Unit	Sets
Rate Per Unit	\$ 20,909.00
Currency	nss ssn
Total C&F Price	\$ 41,818.00
Country of Origin	CANADA

	ы		S:no
	EL/ICL-T2-02 Two Level Tank Control System (qty 2)	4.5	Code/ Item No.
	Two Level Tank Control System		Description Of Stores
Mathematically model the Coupled Tanks plant from first principles in order to obtain the two open-loop transfer functions characterizing the system, in the Laplace domain Linearize the obtained non-linear equation of motion about the quiescent point of operation Lidesign, through pole placement, a Proportional-plus-integral-plus-Feedforward-based controller for the Coupled Tanks system in order for it to meet the required design specifications for various possible configurations timplement controllers and evaluate their	Two Level Tank Control System M/s: NI USA a bench-scale model of two tanks with a pump, ideally suited to introduce control concepts and theories related to fluid dynamics, pressure and time delays, encountered in real world industrial applications, such as petro-chemical, paper making and water treatment plants. Students learn how to:	Multiple loops "PID Fully functional system consisting of Plant, Controller Amplifier and Software Technical Support and Hands on Training by OEM Also contains Rotational Dynamics/Gyro Stabilization Plant to demonstrate real-world control challenges such as those encountered in control and guidance of sea vessels, aircraft and submarines or in satellite navigation. The Gyro/Stable Platform module attaches to the Rotary Servo Base Unit (SRV02). Using this experiment, students learn how to model the system from first principles.	Specifications Of Stores with Model No.
	2		Of Stores
	Sets		Unit
	\$ 11,850.00		Rate Per Unit
	\$ SU		Currency
7	\$ 23,700.00 USA		Total C&F Price
	USA /CANADA		Country of Origin

p-2

		W	7	1	Sino
		EL/ICL-T2-03 DC Motor Control System			Code/ Item No.
		DC Motor Control System			Description Of Stores
	It is a versatile servo system designed to teach and demonstrate the fundamentals of motor servo control in a variety of ways. Developed exclusively for NI ELVIS II. The system can easily be configured to control motor position and speed. Students learn how to:	DC Motor Control System for NI ELVIS II Requires NI ELVIS II base platform (included in price) M/s\NI USA	Readymade Curriculum Topics Derivation of dynamic model from first-principles Transfer function representation Linearization evel control PID Feed-forwar Control parameter tuning Fully functional system consisting of Plant. Controller, Ampliffer and Software Technical Support and Hands on Training by OEM	Features: Overall frame constructed from solid plexiglas. Two tanks and single pump design from solid plexiglas. Two tanks and single pump design I.Pressure? level sensors on each tank. Re-configurable water flow from pump and tanks. Drain tap allows water from top tank to pour directly into basin. Three sizes for outflow orifices supplied (small, medium, and large). Pressure sensors can be calibrated (using gain and offset knobs).	Detailed Specifications Of Stores with Model No.
		2			Qty Of Stores
	-	2 Sets			Unit
0		\$ 6,550.00	16 .		Rate Per Unit
11/10		usş			Currency
7		\$ 13,100.00			Total C&F Price
		/CANADA			Country of Origin

φ ω

	S:no
	Code/ Item No.
	Description Of Stores
-model a DC motor experimentally design and implement a proportional-integral (PI) controller to control the speed of a motor -design and implement a proportional-derivative (PD) controller to control the position of a motor -design and implement a proportional-integral-derivative (PID) controller for tracking error and disturbance rejection Plug-and-play design for quick and easy lab system Removable inertia disk - Durable DC servo motor with no cogging - Bull-in PWM amplifier with linear response - High resolution optical encoder to sense position - Hardware velocity measurement - D51 Comprehensive digital resources and ABET-aligned courseware included Fully compatible with LabVIEW** Readymade curriculum topics 1. System models and parameters provided for LabVIEW** Readymade curriculum topics 1. System modeling and model validation 2. Speed and position control 3. System simulation 4. PID control 5. Error tracking 6. Disturbance rejection Technical Support and Hands on Training by OEM	Detailed Specifications Of Stores with Model No.
	Oty Of Stores
	Unit
	Rate Per Unit
	Currency
	Total C&F Price
	Country of Origin

p-4

- 4	Sino
Heating, Ventilation & Air Conditioning System	
Ventilation & Air	Description Of Stores
Conditioning System for NI ELVIS II Requires NI ELVIS II base platform (not included in price) M/s: NI USA The Heating, Ventilation and Air Conditioning (HVAC) Board is ideally suited to teach and demonstrate the fundamentals of climate control. Developed exclusively for NI ELVIS II. The system can easily be configured to control the temperature in a chamber using a variety of control methods. Students learn how to model a system design and implement a relay feedback controller to control the temperature in the chamber. design and implement a proponitional-integral (PI) controller to control the temperature in the chamber. Features: Plug-and-play design for quick and easy lab setup Variable control of the heater Fixed speed fan Direct heater temperature sensors Comprehensive digital resources andABET-aligned courseware included Fully compatible with LabVIEW Fully documented system models and parameters provided for LabVIEW Fully documented system models and parameters provided for LabVIEW Felay / on-off control design 3. System modeling 4. Parameter identification 5. Model validation 6. PI control design 7. Saturation and integrator windup 8. Feedback control set-point weighing Technical Support and Hands on Training by OEM	Specifications Of Stores with Model No.
	Of Stores
	Unit
	P T
	Currency
	Total C&F Price
CANADA	Country of Origin

p-5

	0.10
Basic Rotary Pendulum Control System	
Pendulum Control	Description Of Stores
System for NI ELVIS II M/s: NI USA Requires NI ELVIS II base platform (not included in price) It is a versatile unit ideally suited to teach and demonstrate the fundamentals of inverted pendulum balance and control. Developed exclusively for NI ELVIS II. The system can easily be configured to teach hybrid swing-up and LQR control fundamentals model a pendulum design and implement a state-feedback controller to balance the pendulum in the upright position design and implement a controller to swing up the pendulum. Features -Plug-and-play design for quick and easy tab setup -Durable DC servo motor -Built-in PWM amplifier with linear response -High resolution optical encoder -Protective cover to shield the circuitry -comprehensive digital resources and ABET-aligned courseware included -Fully compatible with LabVIEW** -Fully documented system models and parameters provided for LabVIEW** Readymade curriculum Topics System modeling -Parameter estimation -Balance control -Linear-Quadratic Regulator design -Non-minimum phase -Friction compensation -Non-linear swing up control -Energy-based control -Hybrid control Technical Support and Hands on Training by	
	Of Stores
0 0	Unit
0,080,000	P
	Currency
4/	000
	Total C&F Price
CANADA	Country of Origin

P-6

S:no	o o
	EL/ICL-T2-06
Description Of Stores	Vertical Take -off and Landing (VTOL) system
Detailed Specifications Of Stores with Model No.	Vertical Take-off and Landing (VTOL) system for NI ELVIS II M/s: NI USA Requires NI ELVIS II (not included in price) It is ideally suited to teach and demonstrate the fundamentals of flight dynamics and vertical take-off and landing flight control. The system can easily be configured to control the flight of the trainer using a variety of control methods. Students learn how to: • model a system • design and implement a proportional-integral (PI) controller to control current • find the system resistance based on measurements • design and implement a proportional-integral-derivative (PID) controller to control current • factors are typically more difficult to model. Reatures: Compact rotary servo system • Plug-and-play design for quick and easy lab setup • High quality rugged propeller assembly • High ar flow fan with safety guard • High ar flow
Oty Of Stores	N
Unit	SETS
Rate Per Unit	\$ 3,595.00
Currency) asu
80 1	\$ 7,190.00
Country of Origin	ICANADA

P-7

	S:no
	Code/ Item No.
	Description Of Stores
Topics covered in the readymade courseware: 1.Experimental modeling 2 Identifying parameters experimentally 3.Model validation 4.PID control 5.Current control 6.Prich control 7.Cascade control 8.Actuator dynamics Technical Support and Hands on Training by OEM	Detailed Specifications Of Stores with Model No.
	Qty Of Stores
	Unit
es.	Rate Per Unit
	Currency
	Total Country C&F Price of Origin
	Country of Origin

A STATE OF THE PROPERTY OF THE

NOTE: INSTALLATION/TRANNING BY NI ENGINEER

Z. 1

P-8

ATT: Project Director
MUET SHAHEED Z.A BHUTTO CAMPUS
KHAIRPUR MIR'S

SUB:

Quotation For Instrumentation & Control lab of Electrical Engineering Department

ANNEXURE "C2"

,						
o	5	4	ω	2		S:no
EL/ICL-T2-06	EL/ICL-T2-05	EL/ICL-T2-04 Heating, Ventilati & Air Co System	EL/ICL-T2-03	EL/ICL-T2-02 Two Level Tank Cont System	EL/ICL-T2-01	Item Code
EL/ICL-T2-06 Vertical Take -off and Landing (VTOL) system	Basic Rotary Pendulum Control	Heating, Ventilation & Air Conditioning System	DC Motor Control System	Two Level Tank Control System	Ball & Beam Control System	Description of store
69	th.	49	S	40	60	Tota
7,190.00	7,190.00	5,550.00	13,100.00	23,700.00	41,818.00	Total C&F Price for Part 1
USD	USD	USD	USD	USD	USD	Currency
A						Exchange Rate
2						for Part I (Rs)
						Part II (Rs)
	-	ş				Total Cost (Rs)



NUMESFIELFONLY

MURIAMMAD FAISAL KHAN STAMP VENDOR Licence No. 124, Shop No. S-7, Maymar Tower Guishan-e-Maymar Karachk

S. NO.

DATE 1 1 JAN 2017.
SSUED TO WIEN ADDRESS MUNAMINAD YAQOOD HROUGH WITH ADDRESS MUNAMINAD ADVOCATE OF THE POSE ADVOCATE OF THE POSE OF THE P

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22 35011 157 ARTICLES OF AGREEMENT

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This Agreement made this 20th day of March 2017, by and between the Pro Vice Chanceller, MEHRAN UNIVERSITY ENGINEERING AND TECHNOLOGY, SZA Bhutto campus Khairpur Mir's. Sindh including his successors in office and Assignees/ Agents, acting through the Project Director, including his successors of Engineering and Technology, hereinafter called the "University", of the one part.

And Mr. RAFIQ AHMED LAKHANI (C.E.O)

(name and designation of the authorized person)

of RASTEK TECHNOLOGIES located at C-15, Classic Centre Main University Road Gulshan-E -Igbal Block-16 Karachi.

hereinafter called the "Contractor" which expression shall include their successor dega representatives of the second part.

Whereas the University requires Laboratory equipment at Khairpur Mir's whereas the Contractor has agreed to supply, install, put into operation and demonstrate the working of the said store valued at US\$ 65,789.00 (US \$ SIXTY FIVE THOUSAND SEVEN HUNDRED EIGHTY NINE Only (amount in figures and words)

in the period of 120 days / months, subject to the terms and conditions set forth, hereinafter, which have been accepted by the Contractor.

Now this Agreement witnessed as follows:

In this agreement works and expressions shall have the same meanings as
respectively assigned to them in the Conditions of Contract hereinafter referred to the conditions.

The following documents which, for the purpose of identification, have been signed by Mr. RAFIQ AHMED LAKHANI (C.E.O)

(name and designation of the authorized person).

on behalf of the Contractor, and by

(name and designation of the authorized person)
on behalf of the University, all of which shall be deemed

form and be read and construed as a part of this Agreement viz:

a) Articles of Agreement;

- b) instructions to Tenders:
- e) Condition of Contract;
- d) Contract's offer including the relevant correspondences prior to signing of the Agreement with all Annexure duly filled in:
- e) The specifications of the stores; and
- f) Bill of quantity with prices.

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- 3. In consideration of the payment to be made to the contractor, the **Contractor** hereby **covenants** with the University to supply, deliver, install, put into operation and demonstrate the working of the stores in conformity in all respects of the Contract & the order form No# PD/MUET/KHP-88
- 4. The University hereby covenants to pay the contractor in consideration of the supply, delivery, installation, putting into operation and demonstration of the working of the equipment the contact price in the manner prescribed by the contract and approved by the University.

In witness Thereof the parties have hereunto set their respective hands and seals, the day month and year above written.

		Dewing
WITNESSES:		PRProject Directoror MUET, Shaheed Z.A. Bhutto Campus Khairpur Mir's
University Witness No. 1:	Signature	The state of the s
	Name: Safdan Ali	
	Designation: Supermlanden	<u>l</u> —
University witness No. 2:	Signature:	
	Name: Nim Ahmed	···
	Designation: CCPO	CH
•		CONTRACTOR
Contractor's Witness No. 1:	Signature:	
	Name:FEROZ	
	Designation:Support Engineer	
Contractor's Witness No. 2:	Signature: Name: Engr. Amir Raza	
	Designation: Application Engineer	

SINDH PUBLIC PROCUREMENT REGULATORY AUTHORITY

CONTRACT EVALUATION FORM

TO BE FILLED IN BY ALL PROCURING AGENCIES FOR PUBLIC CONTRACTS OF WORKS, SERVICES & GOODS

D	NAME OF THE ORGANIZATION / DEPTT.	MUET, Shaheed Z.A Bhutto Campus Khairpur Mir's	
2)	PROVINCIAL / LOCAL GOVT./ OTHER	Federal Government	
3)	TITLE OF CONTRACT	Procent: Equipt: Instrumentation & Control Lab of Elect: I	Dep
4)	TENDER NUMBER	NIT NO: PD/MUET/KHP/387 DATED: 23-08-2016	
5)	BRIEF DESCRIPTION OF CONTRACT	Procent: Equipt: Instrumentation & Control Lab of Elect I	Dep
6)	FORUM THAT APPROVED THE SCHEME	Higher Education Commission, Islamabad	
7)	TENDER ESTIMATED VALUE	6.907 (M)	
8)	ENGINEER'S ESTIMATE (For civil works only)	N.A.	
9)	ESTIMATED COMPLETION PERIOD (AS P	PER CONTRACT) 06 Months	
	TENDER OPENED ON (DATE & TIME)	20-09-2016 @ 12.30pm	
11)	NUMBER OF TENDER DOCUMENTS SOLI (Attach list of buyers)	D Three (03) Nos	
12)	NUMBER OF BIDS RECEIVED	Two (02) Nos	
13)	NUMBER OF BIDDERS PRESENT AT THE	TIME OF OPENING OF BIDS 02 Nos	
14)	BID EVALUATION REPORT (Enclose a copy)	Enclosed	
15)	NAME AND ADDRESS OF THE SUCCESSE	FUL, BIDDER M/s Rastek Technologies, Karachi	
16)	CONTRACT AWARD PRICE	6.907 (M)	
17)	RANKING OF SUCCESSFUL BIDDER IN E (i.e. 1^{st} , 2^{nd} , 3^{rd} EVALUATION BID).	VALUATION REPORT 1st Lowest	
18)	METHOD OF PROCUREMENT USED : - (Ti	ick one)	
	a) SINGLE STAGE – ONE ENVELOPE	E PROCEDURE Domestic/ Loca	i
	b) SINGLE STAGE – TWO ENVELOPE	E PROCEDURE Yes	
	c) TWO STAGE BIDDING PROCEDUI	RE	
	d) TWO STAGE – TWO ENVELOPE B	IDDING PROCEDURE	
	PLEASE SPECIFY IF ANY OTHER EMERGENCY, DIRECT CONTRACTIN	METHOD OF PROCUREMENT WAS ADOPTED G ETC. WITH BRIEF REASONS:	i.e

71	ADDOOUNG ALCOHOUTE CON AWARD OF COM		ice Chancellor
	APPROVING AUTHORITY FOR AWARD OF CONT	RACI_	
(0)	WHETHER THE PROCUREMENT WAS INCLUDED	IN ANN	Ves No No
1)	ADVERTISEMENT:		
		Yes	SPPRA Web SERIAL NO # 29804
	 SPPRA Website (If yes, give date and SPPRA Identification No 		
	(if yes, give time the SET for identification (to	No	
	ii) News Papers	Yes	Dody Jaco (Hedy) Dt 27 08 2016 Date
	(If yes, give names of newspapers and dates)	1 63	Daily Jang (Urdu) Dt: 27-08-2016, Daily Sind Express (Sindhi) Dt: 27-08-2016 & Daily Dawn (English) Dt: 29-08-2016
	. ()	No	Daily David Language Language
22)	NATURE OF CONTRACT		Demonstrative Lint.
233	WHETHER QUALIFICATION CRITERIA		
-2)	WAS INCLUDED IN BIDDING / TENDER DOCUME	ENTS?	
	(If yes, enclose a copy)		Yes V No
24)	WHETHER BID EVALUATION CRITERIA WAS INCLUDED IN BIDDING / TENDER DOCUME	POTING	Yes V No
	(If yes, enclose a copy)		
	¥	1	
25)	WHETHER APPROVAL OF COMPETENT AUTHOR METHOD OTHER THAN OPEN COMPETITIVE BID		S OBTAINED FOR USING A
	METHOD OTHER MAN OF EN COMPETITIVE BIE	Durd	Yes No
	WAS BID SECURITY OBTAINED FROM ALL THE		
26)		BIDDER	S?
26)		BIDDER	Yes No No
			Yes No
	WHETHER THE SUCCESSFUL BID WAS LOWEST BID / BEST EVALUATED BID (in case of Consultance)	EVALUA	Yes No
27)	WHETHER THE SUCCESSFUL BID WAS LOWEST BID / BEST EVALUATED BID (in case of Consultance)	EVALU/	ATED Yes V No
27)	WHETHER THE SUCCESSFUL BID WAS LOWEST BID / BEST EVALUATED BID (in case of Consultance) WHETHER THE SUCCESSFUL BIDDER WAS TECH	EVALU/	Yes V No Yes V No
27)	WHETHER THE SUCCESSFUL BID WAS LOWEST BID / BEST EVALUATED BID (in case of Consultance)	EVALU/	ATED Yes V No
227)	WHETHER THE SUCCESSFUL BID WAS LOWEST BID / BEST EVALUATED BID (in case of Consultance whether the successful bidder was technology).	EVALUA ies) HNICALI	Yes V No Yes V No No
227)	WHETHER THE SUCCESSFUL BID WAS LOWEST BID / BEST EVALUATED BID (in case of Consultance) WHETHER THE SUCCESSFUL BIDDER WAS TECH	EVALUA ies) HNICALI	Yes No
227) 228)	WHETHER THE SUCCESSFUL BID WAS LOWEST BID / BEST EVALUATED BID (in case of Consultance) WHETHER THE SUCCESSFUL BIDDER WAS TECH COMPLIANT? WHETHER NAMES OF THE BIDDERS AND THE THE TIME OF OPENING OF BIDS?	EVALUA ies) HNICALI R QUOT	Yes V No Yes V No Yes V No ED PRICES WERE READ OUT AT Yes V No
227) 228)	WHETHER THE SUCCESSFUL BID WAS LOWEST BID / BEST EVALUATED BID (in case of Consultance whether the successful bidder was tech compliant? WHETHER NAMES OF THE BIDDERS AND THEIR THE TIME OF OPENING OF BIDS? WHETHER EVALUATION REPORT GIVEN TO	EVALUA ies) HNICALI R QUOT	Yes No
227) 228)	WHETHER THE SUCCESSFUL BID WAS LOWEST BID / BEST EVALUATED BID (in case of Consultance) WHETHER THE SUCCESSFUL BIDDER WAS TECH COMPLIANT? WHETHER NAMES OF THE BIDDERS AND THE THE TIME OF OPENING OF BIDS?	EVALUA ies) HNICALI R QUOT	Yes No No Yes No

			7
3	1) ANY COMPLAINTS RECEIVED (If yes, result thereof)	Yes	
		No	No.
3	2) ANY DEVIATION FROM SPECIFICATIONS GIVEN (If yes, give details)	N IN THE T	ENDER NOTICE / DOCUMENTS
	(11 yes, give details)	Yes	
		No	No
3	3) WAS THE EXTENSION MADE IN RESPONSE TIM (If yes, give reasons)	E? Yes	Yes copy attached
		No	
3	4) DEVIATION FROM QUALIFICATION CRITERIA (If yes, give detailed reasons.)	Yes	
		No	No
3	5) WAS IT ASSURED BY THE PROCURING AGEN BLACK LISTED?	ICY THAT	THE SELECTED FIRM IS NOT Yes No No
3	6) WAS A VISIT MADE BY ANY OFFICER/OFFICIA SUPPLIER'S PREMISES IN CONNECTION WITH BE ASCERTAINED REGARDING FINANCING OF (If yes, enclose a copy)	THE PROC	UREMENT? IF SO, DETAILS TO
3	7) WERE PROPER SAFEGUARDS PROVIDED ON THE CONTRACT (BANK GUARANTEE ETC.)?	MOBILIZA	TION ADVANCE PAYMENT IN Yes No
3	8) SPECIAL CONDITIONS, IF ANY (If yes, give Brief Description)	Yes	
		No	No
Signa A	uthorized Officer Sajjad Hussain Memon (Project Director	or)	

<u>SPPRA, Block. No.8, Sindh Secretariat No.4-A, Court Road, Karachi</u> Tele: 021-9205356; 021-9205369 & Fax: 021-9206291

Print Save Reset



MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, SHAHEED Z.A BHUTTO CAMPUS KHAIRPUR MIR'S Phone No.0243-9280314

No. PD/MUET/KHP/- **512**-Dated: 19-12-2016

To,

Manager (Reforms)
Sindh Public Procurement Regulatory Authority,
Government of Sindh,
Barrack 8 Secretariat 4A
Court Road, Karachi.

SUBJECT: EXTENSION OF BID VALIDITY. SPPRA SR. NO.29804.

Reference to the NIT No.PD/MUET/KHP/-387 Dated:23-08-2016 hoisted on SPPRA website under Serial No. 29804 for Procurement of Equipment for remaining Laboratories of Mechanical Engineering Department and Instrumentation & Control Lab of Electrical Engineering Department at MUET, Shaheed Z.A Bhutto Campus Khairpur Mir's.

As per original schedule the bid validity will expire on 20.12.2016, however the permission of extension of bid validity was obtained from the competent authority (copy attached). Such matter of extension was also communicated to the bidding firms who had participated in the tendering process. The bidding firms have also willingly extended validity of their offers (copies attached herewith).

It is therefore requested to kindly extend the bid validity at your end and oblige.

With Best Regards,

PROJECT DIRECTOR

C.C to:

1. The Secretary to Pro-Vice Chancellor, MUET, Shaheed Z.A.B Campus Khairpur Mir's.



MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, SHAHEED Z.A BHUTTO CAMPUS KHAIRPUR MIR'S Phone No.0243-9280314

No. PD/MUET/KHP/- 36 Dated:01-02-2017

To.

Manager (Reforms)

Sindh Public Procurement Regularity Authority

Barrack-8 Secretariat 4-A

Court Road Karachi.

SUBJECT:

BID EVALUATION REPORT FOR THE PROCUREMENT OF EQUIPMENT REMAINING LABORATORIES OF MECHANICAL ENGINEERING DEPARTMENT INSTRUMENTATION OF AND CONTROL LAB OF ELECTRICAL ENGINEERING DEPARTMENT AT MUET, SHAHEED Z.A BHUTTO CAMPUS KHAIRPUR MIR'S.

Reference:

NIT NO: PID (H) 97707 DATED:29-08-2016 SERIAL No. 29804.

Dear Sir.

We are enclosing here hard and soft copies on CD of Bid Evaluation Report of Part-II (signed by the Procurement Committee) of the subject NIT for hoisting / publication on the SPPRA website in compliance of Rule No. 45.

The Part-I of the subjected procurement is dropped due to un-availability of funds.

It is further requested that the Bid Evaluation Report of Part-II subjected NIT may kindly be hoisted at SPPRA website on the Evaluation Reports webpage, at earliest so that the post tender codal formalities could be completed.

Your earliest response will highly be appreciated please.

C.C to:

1. Deputy Director, ICPC, MUET, Shaheed Z.A Bhutto Campus Khairpur Mir's Bid Evaluation Report for uploading on Web-Site of MUET, Shaheed Z.A Bhutto Campus Khairpur Mir's.

Red 2-000 2. The Secretary to Pro-Vice Chancellor, MUET, Shaheed Z.A Bhutto Campus, Khairpur Mir's.